

**PUBLIC UTILITIES COMMISSION OF THE STATE OF CALIFORNIA**

Rail Safety and Carriers Division  
Rail Engineering Safety Branch  
Rail Transit Safety Section

RESOLUTION ST-52  
November 29, 2001

**RESOLUTION**

RESOLUTION GRANTING THE SANTA CLARA VALLEY  
TRANSPORTATION AUTHORITY (SCVTA) AN EXEMPTION  
FROM GENERAL ORDER 143-B, SECTION 3.03 REAR VISION  
MIRRORS.

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**Summary**

This resolution grants the Santa Clara Valley Transportation Authority's (SCVTA) request for authority to deviate from the rear vision mirrors requirements of General Order 143-B, Section 3.03 to permit the use of cameras instead of mirrors. The deviation allows the use of rear vision cameras as requested to be the standard specified in the acquisition of the new low floor light rail vehicles (LRVs) without compromising the safety function of the required rear vision mirrors.

**Background**

By letter dated June 26, 2001, SCVTA requested authority to deviate from the requirements of General Order 143-B, Section 3.03 Rear Vision Mirrors, which states:

Every LRV operating cab shall be equipped with two (2) rear vision mirrors, one on each side of the vehicle, located so as to allow the operator a view of the rear along both sides of the train for the full length of the train on tangent track.

The request for deviation addresses the word “mirrors” in that SCVTA intends to equip their new low floor LRVs with cameras instead of mirrors. SCVTA currently operates its existing fleet with rear vision mirrors in compliance with General Order 143-B, Section 3.03. However, the new low floor LRVs are wider than the current LRVs. Mirrors that are sufficiently large to provide adequate visibility will violate current SCVTA system clearance requirements as well as those of General Order 143-B. It is for this reason primarily that SCVTA is requesting the authority to replace the mirrors with cameras.

### **Discussion**

The intent of Section 3.03 of General Order 143-B is to provide the operator the ability to view each side of the LRV. SCVTA is requesting the authority to deviate from Section 3.03 of General Order 143-B by proposing the replacement of the rear vision mirrors with rear vision cameras. This request is to be only applied to the newly purchased low floor LRVs from Kinkisharyo of Japan. If mirrors were added to the new LRVs, the vehicles would be too wide for the existing system and would violate the Commission’s wayside-to-train clearance requirements (Section 9.06 of General Order 143-B).

The mirror replacement system consists of two cameras for each end of the LRV, one on each side. Two closed circuit television (CCTV) screens are located at the right-hand end of the operator’s console. The left screen displays the view down the left side of the LRV while the right screen shows the view down the right side of vehicle. The cameras are fixed and extend only 2.5 inches from the outer shell of the LRV, thus meeting clearance requirements.

The camera system is equipped with automatic compensation for day or night conditions and can be adjusted by the operator in the cab for maximum clarity. The brightness of the camera system will adjust automatically upon entering tunnels or night conditions. The lenses of the cameras are dust- and dirt-resistant because they are installed at an angle toward the ground and have a protective covering.

Comparison of mirrors to the proposed camera/monitor system shows that the camera system is superior because it provides the following advantages:

- Elimination of glare to the operator.

- Enhanced visibility between cleanings.
- Enhanced reliability and sturdiness because of the protection offered by the metal housing.
- Ability of the operator to view both sides of the LRV simultaneously.
- Less likelihood of failure caused by hitting wayside obstructions due to their fixed, compact design.

SCVTA has developed a Standard Operating Procedure (SOP) concerning the use of the Mirror Replacement (MR) System. This SOP is numbered 5.8 and covers operation of the system as well as actions to take in case of failure of the system while in mainline operation. Section 4.3 of the SOP, Failure of the System, states that:

In case of failure of one or both cameras, the train is permitted to remain in service to the end of the line, or to a point where a car exchange can be made, whichever comes earlier. If the cameras are serviceable on the other end of the car, the car can return from the end of the line provided both cameras are serviceable in that direction. The car will be exchanged or the MR system restored to service before the car proceeds in the direction of the failed camera. Note: While operating with one or more cameras failed, the operator must be assured that no one is caught in the doors by leaning out of the side cab window and visually inspecting down the side of the car after the doors close.

### **Comments**

This is an uncontested matter in which the resolution grants the relief requested. Accordingly, pursuant to Public Utilities Code Section 311(g)(2), the otherwise applicable 30-day period for public review and comment is being waived.

**Findings**

1. By letter dated June 26, 2001, SCVTA requested authority to deviate from the requirements of General Order 143-B, Section 3.03 Rear Vision Mirrors.
2. This request for deviation is to be applied to the newly purchased low floor vehicles from Kinkisharyo of Japan.
3. The proposed MR System meets the safety requirement of Section 3.03 of General Order 143-B.
4. SCVTA SOP 5.8, Kinkisharyo Side View CCTV System, provides adequate visibility for the safe operation of the system in mainline service.

**Therefore, IT IS ORDERED that:**

The Santa Clara Valley Transportation Authority is granted authority to deviate from the rear vision mirrors requirement of General Order 143-B, Section 3.03 so that the rear vision mirrors for the newly purchased Series 900 low floor light rail vehicles may be replaced by a side view closed circuit television system.

This resolution is effective today.

I certify that the foregoing resolution was duly introduced, passed, and adopted by the Commission at its regularly scheduled meeting on November 29, 2001. The following Commissioners voted favorably thereon:

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WESLEY M. FRANKLIN  
Executive Director

LORETTA M. LYNCH  
President  
HENRY M. DUQUE

RICHARD A. BILAS  
CARL W. WOOD  
GEOFFREY F. BROWN  
Commissioners